



P. O. BOX 970

MELBOURNE, FLORIDA 32901



A
T NELSON
BOX 3
SCHOOLEYS MTN
NJ 07670
PROD

Another Day in the life of a Kidder Hazen



Gentlemen:

Thank you for your interest in HETRA's data processing system.

The response has been much greater than we had anticipated and unfortunately we are temporarily out of S Series descriptive literature. In the meantime, I am enclosing a brochure on our T Series Remote Processing Terminals. These terminals are configured identically to the S Series Data Processing System with the exception that they include communications routines in the firmware of the system. Other than that, the processors and the peripherals are identical to the S/I, S/II, and S/III Systems. I have also enclosed a price list on our products. We are presently quoting sixty (60) to ninety (90) day deliveries, subject to prior sales.

Should you desire additional information, your inquiries will be most welcome.

Sincerely,

HETRA

Keith Milligan
Keith Milligan JRE
President

KM/jre

Enclosures: T Series Terminal Brochure and Price List



CHANGE IN LOCATION OF HETRA EXHIBIT AT THE SJCC

THE LOCATION OF THE HETRA EXHIBIT AT THE SPRING JOINT COMPUTER CONFERENCE - TO BE HELD IN ATLANTIC CITY, N. J. 5 - 7 MAY, - HAS BEEN CHANGED FROM THE MARLBORO BLENHEIM HOTEL TO THE MAIN EXHIBIT FLOOR IN CONVENTION HALL. THE HETRA EXHIBIT WILL OCCUPY BOOTHS 6116 AND 6117, WHICH ARE IN THE AISLE IMMEDIATELY TO THE RIGHT OF THE MAIN STEPS LEADING TO THE STAGE AND CAFETERIA AREA. WE WILL BE SHOWING OUR T/II REMOTE PROCESSING TERMINAL SYSTEM AND PRESENTING A HIGHLY ENTERTAINING AND INFORMATIVE SLIDE TALK AND HARDWARE DEMONSTRATION. JOIN US AND DISCOVER WHY THE HETRA T-SERIES OF REMOTE PROCESSING TERMINAL SYSTEM IS THE MOST POWERFUL, FLEXIBLE AND EXPANDABLE FAMILY OF PROGRAMMABLE REMOTE BATCH ENTRY TERMINALS AVAILABLE TODAY.



HETRA

PRICE SCHEDULE

16

Class and Model Number:

S-Series Data Processing Systems:

S/I
S/II
S/III

T-Series Remote Processing Terminals:

T/I
T/II
T/III

Series 200 - Rotary Memories:

2060 F Disc File
2001 M Disc File
2006 M Disc File

Series 3000 - Printers:

3080 A Line Printer
3132 A Line Printer
3030 A Character Printer

Series 4000 - Conversational Terminals:

4015 TA Typewriter
4096 AC Visual Display
4018 AC Visual Display
4033 ATTY Teletypewriter
4035 ATTY Teletypewriter
4030 AP Printer Terminal

Series 5000 Card Equipment:

5300 Card Reader
5400 Card Reader
5150 Read/Punch/Printer
5500 Read/Punch/Printer

Series 6000 - Magnetic Tapes:

6005 ATC Cassette Recorder
6006 DTC Dual Cassette Recorder
6020 ATR Tape Recorder

Series 7000 - Memory Systems (Total Storage):

7100 A Core Memory, 4K
8K
12K
16K
32K
65K

7075 A Core Memory, 16K
32K
48K
64K

Series 8000 - Communications Adaptors:

8001-8 LTU Synchronous Line Terminator
8002 AM Modem Adapter
8003 AM Modem Adapter
8004 AM Modem Adapter
8064 Multiplexer/Concentrator

(Basic)

Series 9000 - Displays:

9100 Remote Diagnostic Console

**Prices Exclusive of Core Storage*

Prices Listed on this schedule are subject to change without prior notice

P. O. BOX 970 / 1151 SOUTH EDDIE ALLEN ROAD / MELBOURNE, FLORIDA 32901 / TELEPHONE (305)

T-SERIES REMOTE PROCESSING TERMINAL SYSTEMS

HETRA



T-SERIES

HETRA T-Series Remote Processing Terminal Systems make possible for the first time highly efficient utilization of sophisticated data communications networks employing large-scale processors such as the Model 67, 1108, and 6600. Previously, most remote terminals performed nothing but data input and reception while the central computer was bogged down with performing all editing, processing, formatting, and file updating.

With the advent of the T-Series Programmable Terminal Systems, it is now possible not only to enter and receive data at a remote location, but also to perform editing, formatting and local processing at that location. This frees the central computer to devote its resources, core storage, and data channels to the execution of large computational programs as well as performing updating and maintenance of shared or common files stored on the central computer.

T-SERIES CHARACTERISTICS

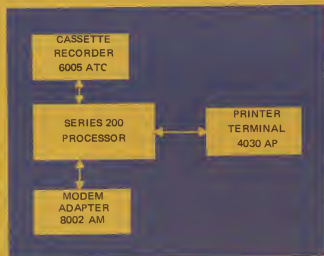
The HETRA T-Series Systems are the most powerful, flexible and expandable family of programmable remote terminals available today. These communications-oriented terminals are specifically configured to effectively perform:

- ☐ Conversational processing and remote job entry;
- ☐ Remote job entry plus local processing;
- ☐ Remote job entry plus local processing plus data concentration.

The HETRA T-Series Systems provide many outstanding communications features for users operating either sophisticated or straight forward communications systems. Some of these features are:

- ☐ Ability to accommodate a wide variety of communication media and speeds from teletypes to direct links with other computing systems.
- ☐ Capacity to execute within the firmware of the system: bit synchronization, error detection, buffering and clocking, character assembly and disassembly, error control, code conversion and end-of-block sensing.
- ☐ Ease of implementation of character string analysis, message formatting, message queuing, and message routing.
- ☐ Excellent data multiplexing and concentration capabilities.
- ☐ Ready implementation of code conversions, character handling, editing, formatting, and other logical and computational operations required by communications processing.

FIGURE 1. TYPICAL HETRA T/I SYSTEM



There are three distinct T-Series Systems. The three T-Series Systems are the T/I, T/II and T/III. Typical peripheral equipment complements of each system are illustrated in Figures 1, 2 and 3, respectively. The major operating and performance characteristics of these peripheral devices are summarized in Table 1.

The T-Series Systems are basically differentiated by:

- ☐ Price;
- ☐ Throughput;
- ☐ Selection and speed of available peripheral equipment; and
- ☐ Job application.

FIGURE 3. TYPICAL HETRA T/III SYSTEM

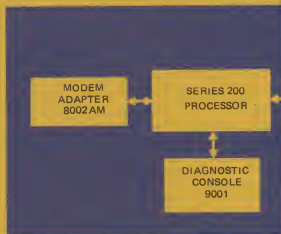
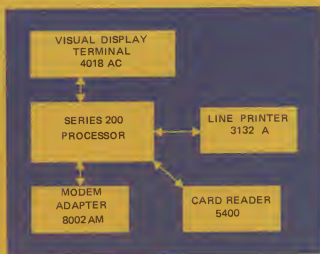
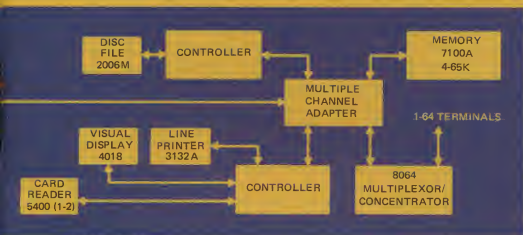


FIGURE 2. TYPICAL HETRA T/II SYSTEM



There are, though, other distinguishing characteristics. For example, T/III differs from T/II and T/I in that all peripherals communicate directly with Main Core Memory (7100A) through a Multiple Channel Adapter (MCA); and sub-processors are used as input/output controllers to provide full overlapping of processing with input/output operations.

Most peripherals are interchangeable between T/I and T/II or T/III. Upgrading from T/I, however, requires replacement of the Series 200 Processor. Upgrading from a T/II to a T/III can readily be achieved, usually in hours, with the simple addition of self-contained electronic modules.

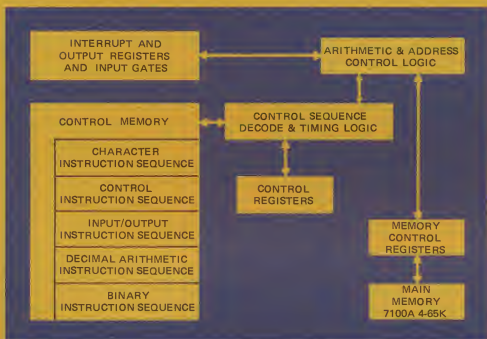


PERIPHERAL EQUIPMENT AVAILABLE ON HETRA T/I, T/II and T/III SYSTEMS

CLASS OF PERIPHERALS	MODEL NUMBER	HETRA SYSTEMS		
		T/I	T/II	T/III
Series 2000 Rotary Memories	2060F Disc File	1	1	1
	2001M Disc File	-	2	2
	2006M Disc File	-	-	4
Series 3000 Printers	3080A Line Printer	-	1	2
	3132A Line Printer	-	1	2
	3030A Character Printer	1	1	Variable
Series 4000 Conversational Terminals	4015TA Typewriter	1	Variable	Variable
	4096AC Visual Display	1	Variable	Variable
	4018AC Visual Display	1	Variable	Variable
	4033ATTY Teletypewriter	1	*	*
	4035ATTY Teletypewriter	1	Variable	*
Series 5000 Card Equipment	4030AP Printer Terminal	1	Variable	Variable
	5300 Card Reader	1	1	2
	5400 Card Reader	1	1	2
	5150 Read/Punch Printer	-	1	2
Series 6000 Magnetic Tapes	5500 Read/Punch Printer	-	1	2
	6005DTC Dual Cassette Recorder	1	2	2
	6005ATC Cassette Recorder	2	2	2
	6020ATR Tape Recorder	-	-	4
Series 7000 Memory Systems	7100A Core Memory	4-16K	4-65K	4-65K
	7075A Core Memory	-	-	16-65K
Series 8000 Adapters	8064 Multiplexer/Concentrator	-	3	3
	8001 - 8LTU Synchronous Line Terminator	-	24	24
	8002AM Modem Adapter	1	12	12
	8003AM Modem Adapter	-	2	2
	8004AM Modem Adapter	-	6	6
Series 9000 Console	9001 Diagnostic Console	-	1	1

*Available as attachments to Multiplexor

SERIES 200 PROCESSOR



THE HETRA BREAKTHROUGH

The Series 200 Processor is the nucleus of the HETRA T-Series Systems, as well as HETRA's compatible S-Series Data-Processing Systems. The technological breakthrough achieved by HETRA with its Series 200 Processor is the result of innovative design concepts. These concepts include:

- ☐ Performance of many operations . . . that conventional computers perform in core storage or by means of a complicated series of input/output instructions . . . within the circuitry — called firmware — of the Series 200 Processor Control Memory.
- ☐ Inclusion within the firmware of substantial microprogramming that allows a single instruction to execute many data-processing operations that typically take more than one instruction using comparable processors. For example, the Series 200 Processor requires only one instruction for the following operations:

- Perform the computer-to-terminal inquire-acknowledge routines;
- Perform error detection and retransmission routines;
- Compare the contents of two operands of different lengths;
- Edit the contents of the operand into the accumulator field with suppression of zeros, and the addition of a decimal point and/or commas; and
- Delete a character string contained in the operand from the contents of the accumulator;
- Replace the contents of the accumulator with the contents of the operand . . . and automatically effect conversion of the contents of the accumulator into the data type specified for the accumulator — that is, from character to decimal, decimal to binary, etc.

SERIES 200 PROCESSOR CONSOLE



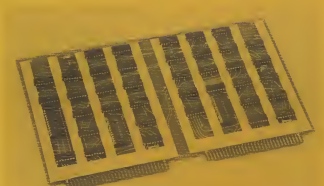
- ☐ Use of the latest commercially available MSI and LSI components mounted on glass epoxy boards which are plugged into a planar voltage, ground, and data signal mother board.
- ☐ Provision of four input/output data channels and one, eight-level priority interrupt channel.

SERIES 200 PROCESSOR BENEFITS

The innovative design concepts on which the Series 200 Processor is based offer the end user many significant benefits. Among them are:

- ☐ Throughput comparable to that offered by many of the larger data processing systems at "mini"-computer prices.
- ☐ Effective computer processing of many applications that previously could only be performed economically either manually, by "tab" equipment, or by electronic accounting machines.
- ☐ Unusually high circuitry speeds.
- ☐ Simplification of the circuits required to execute lengthy input/output channel programs.
- ☐ Firmware tailor-made for specific applications.
- ☐ Substantial reduction in programming time and costs.
- ☐ Effective reduction of program size and corresponding core-storage requirements.
- ☐ Significant increase in programming flexibility over comparable terminal systems.
- ☐ Ability to interface a wide variety of peripheral devices with the processor.
- ☐ Ease of interfacing special purpose equipment and other manufacturer's equipment with the processor.
- ☐ Connection of up to 16 peripheral devices to each input/output data channel through interface adapters.
- ☐ Capability to receive or transmit asynchronous messages while carrying out synchronous processing.
- ☐ Use of sub-processors with the necessary channel programs wired into their firmware as input/output controllers to permit full overlapping of processing with input/output operations.

TYPICAL LOGIC BOARD INCORPORATING MSI CHIPS



SYSTEM ORIENTATION

HETRA T-Series Terminal Systems have been developed specifically to serve all industries which utilize communications networks. The character manipulation capabilities of the T-Series and its complementary software provide capabilities unmatched by any other terminal systems available today at comparable prices.

These capabilities are made possible by such processor firmware features as:

- ☐ Automatic conversion of character, binary, and decimal data to ASCII representation internally makes it relatively easy to process data files generated by any central processing system.
- ☐ Data can be transferred in blocks designated either by length or by an end-of-message symbol.
- ☐ Data may be organized into ENTRIES, which are composed of groups of ITEMS, and FILES, which are a set of occurrences of an ITEM or an ENTRY.
- ☐ Queuing of data is simplified by the use of left-hand and right-hand file pointers. These pointers allow the manipulation of queues on either a First In, First Out (FIFO) or Last In, First Out (LIFO) basis.
- ☐ Conversion, truncation, and padding are automatically performed when operands and accumulators are defined as being of different data types and of different lengths. This means that a ten-digit binary number can be moved to a fifteen digit decimal accumulator with one instruction.
- ☐ Provision is made for the addressing of core at the byte level; that is, every byte in memory may be addressed individually.
- ☐ The ability to define data fields and to pack and unpack data items ensures efficient utilization of both internal and external storage.
- ☐ Extensive overlapping of processing and input/output operations is made possible by four input/output data channels, and one, eight-level priority interrupt channel.

SYSTEMS APPLICATIONS

HETRA T-Series Systems are capable of performing many remote processing tasks for the following industries:

- ☐ Financial Community
- ☐ Transportation Industry
- ☐ Service Companies
- ☐ Manufacturing Firms
- ☐ Petrochemical Field
- ☐ Government Agencies
- ☐ Wholesale and Retail Trade
- ☐ Distribution Companies

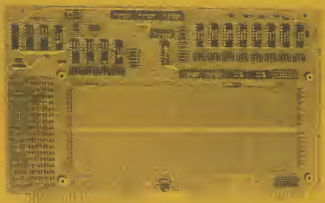
SOFTWARE

Extensive systems software is provided with HETRA Systems. This software includes*:

- ☐ Communications Operating System
- ☐ Input/Output Control System
- ☐ Utility Programs
- ☐ Report Program Generator
- ☐ Programmer's Working Language (PWL)

*Powerful subsets at COBOL and FORTRAN are planned for implementation in the near future.

4 K MEMORY STACK

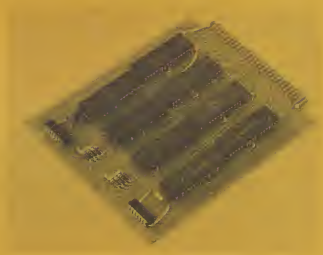


THE COMMUNICATIONS OPERATING SYSTEM includes scheduling, interrupt processing, program loading and allocation, input/output processing, communications routines, error detection and computer handshaking routines.

THE INPUT/OUTPUT CONTROL SYSTEM provides the routines for handling of logical records, buffering, error correction and restart . . . as well as a disc management program featuring random-access capabilities.

THE UTILITY PROGRAMS include program maintenance, file maintenance, text editing, a debugging system and a sort.

THE REPORT PROGRAM GENERATOR (RPG) permits the accumulation of data from one or more files, performs specified calculations, and generates reports. The language associated with this generator includes the standard file descriptions, and specifications for input, extensions, calculations, and output. The features of the RPG System include subroutines, referencing of System variables, and debugging capabilities.



PROGRAMMER'S WORKING LANGUAGE (PWL) is a powerful assembly language and associated language translator that processes input statements, analyzes the syntax for errors, translates the statements into machine instructions and assigns storage locations.

PWL includes data-definition instructions and machine-instruction statements. The available data-definition instructions provide for the following:

- ☐ Data representation is self-describing and allows for variable-length items. This is made possible by the one or two byte code that precedes each item. This code defines data item type — that is, binary, decimal, BCD or ASCII character — and item length.
- ☐ Any byte or string of bytes in memory may be designated an accumulator or an operand.

The machine instruction statements include fields for a label, an accumulator address, mnemonic operators, a condition code, an operand address, and operand modifiers.

- ☐ Symbols may be used in the accumulator field and in the operand field. Alternately, actual addresses may be entered in both these fields.
- ☐ Operators fall into one of five categories . . . Control, Character Handling, Decimal Arithmetic, Binary, and Input/Output.
- ☐ The condition field provides for the instruction to be conditionally executed, based on whether a certain status condition has occurred — for example, accumulator positive, or overflow indicator set.
- ☐ Operand entries may be literals.
- ☐ Literals may be entered in binary, decimal, or character form.
- ☐ Provision is made for multiple precision — that is, up to 31 decimal digits — arithmetic.
- ☐ Statements are available for equating symbols and controlling location counters, as well as for controlling program listings, spacing, printing dumps, and producing object decks.

SERIES 200 PROCESSOR INSTRUCTION REPERTOIRE

Some of the more interesting instructions offered by the Series 200 Processor are listed and described briefly in the table that follows.

TYPE	INSTRUCTION	DESCRIPTION*
CONTROL	Designate Accumulator	Designate a number of contiguous bytes of storage as current accumulator.
	Designate Address as Accumulator	Designate address as current accumulator.
	Replace with map Address	Replace accumulator with data map.
	Save Accumulator Address	Save address of current accumulator in data map.
	Step	Increment or decrement data map.
	No Operation	No operation.
	Branch	Branch to another location.
	Branch and Save Link	Branch to a subroutine saving links in a push-down store.
	Branch Back	Return from subroutine, restoring links.
	Supervisor Call	Places the program in a supervisory status.
CHARACTER HANDLING	Replace	Replace accumulator with operand with automatic truncation, fill, and conversion.
	Compare	Compare accumulator and operand.
	Catenate	Right juxtapose operand to accumulator.
	Delete	Delete from accumulator first occurrence of operand.
	Delete Left	Delete from accumulator first occurrence of operand and all characters that precede it.
	Merge	Compares contents of accumulator with contents of a specified operand and replaces each NULL in the accumulator with the contents of next available non-NULL byte in the specified operand.
	Delete Right	Delete from accumulator first occurrence of operand and all characters that follow it.
	Mask	Mask the accumulator using the operand.

TYPE	INSTRUCTION	DESCRIPTION*
DECIMAL ARITHMETIC	Add	Add operand to accumulator.
	Subtract	Subtract operand from accumulator.
	Edit	Edit the operand into the accumulator, e.g., zero suppression, decimal point and commas.
	Multiply	Multiply operand by accumulator.
	Divide	Divide operand into accumulator.
	Divide Modulo	Place into the accumulator the remainder from dividing the operand into the accumulator.
BINARY	Add	Add binary operand to accumulator.
	Subtract	Subtract binary operand from accumulator.
	Arithmetic Right Shift	Shift accumulator right, extending sign.
	Logical Shift	Shift accumulator left or right.
	Rotate	Circular shift accumulator right.
	Complement	Complement the accumulator.
	AND	Place logical product of operand and accumulator in accumulator.
	OR	Place logical sum of operand and accumulator in accumulator.
	EXCLUSIVE OR	Place logical difference of operand and accumulator in accumulator.
INPUT/OUTPUT	Read	Read data into accumulator with fixed-length or to end of record character string.
	Write	Write accumulator to device.
	Query	Checks status of I/O Channel.
	Locate	Locates data, using the file directory.
	Control	Control external device, e.g., rewind tape.

*Most instructions may be conditional.

TABLE 1 T-SERIES PERIPHERAL EQUIPMENT

HETRA's Systems Engineers have thoroughly evaluated and tested many peripheral devices to interface with T-Series Systems. The result of this intensive evaluation program is the avail-

ability of reliable peripheral devices which provide optimum price/performance consistent with the T-Series operating characteristics.

HETRA SERIES 2000 ROTARY MEMORIES

MODEL 2060F DISC FILE

Recording Media:	Fixed Disc
Total Capacity:	55,000 Bytes
Read/Write Heads:	25 Flying Heads
Bytes Per Track:	2100
Average Latency Time:	8.5 Milliseconds
Character Transfer Rate:	135K Bytes Per Second

MODEL 2001M DISC FILE

Recording Media:	1 Removable Cartridge
Total Capacity:	1.2 Million Bytes
Bytes Per Cylinder:	6000
Average Latency Time:	20 Milliseconds
Average Head Positioning Time:	30 Milliseconds
Character Transfer Rate:	80K Bytes Per Second

MODEL 2006M DISC FILE

Recording Media:	2 Removable Cartridges
Total Capacity:	8.4 Million Bytes
Bytes Per Cylinder:	262,000
Average Latency Time:	21 Milliseconds
Average Head Positioning Time:	40 Milliseconds
Character Transfer Rate:	108K Bytes Per Second

HETRA SERIES 3000 PRINTERS

MODEL 3080A LINE PRINTER

Lines Per Minute:	356
Columns Per Line:	80
Character Set:	64 USASCII
Number of Copies:	5 Minimum
Form Width:	Variable to 9 7/8"

MODEL 3132A LINE PRINTER

Lines Per Minute:	600
Columns Per Line:	132
Character Set:	64 USASCII
Number of Copies:	5 Minimum
Form Width:	Variable to 15 1/2"

MODEL 3030A CHARACTER PRINTER

Speed: Alphabetic —	25 Characters Per Second (Average)
Numeric —	30 Characters Per Second (Average)
Tabulating (Forward and Reverse):	144 Positions Per Second
Spacing:	100 Positions Per Second
Type Format:	Manifold
Paper Feed:	Pin Feed, Split Platen
Writing Line:	192 Characters
Form:	Pin Feed, 16 7/8"
Number of Copies:	Original and Six
Input:	Computer

HETRA SERIES 4000 CONVERSATIONAL TERMINALS

MODEL 4015TA TYPEWRITER TERMINAL

Print Speed:	15 Characters Per Second
Platen Size:	16 Inches
Character Set:	88 Upper/Lower Case-Changeable
Input Mechanism:	Keyboard/Computer
Output Mechanism:	IBM Selectric

MODEL 4096AC VISUAL DISPLAY TERMINAL

Display Capacity:	960 Characters
Character Set:	64 USASCII
Display Media:	Cathode Ray Tube
Character Format:	Closed Stroke, 8 Per Character Maximum
Screen Format:	12 Lines x 80 Characters
Input Media:	Keyboard/Computer
Data Rate:	300 Characters Per Second

MODEL 4018AC VISUAL DISPLAY TERMINAL

Display Capacity:	1080 Characters
Character Set:	64 USASCII
Display Media:	Cathode Ray Tube
Character Format:	20 Lines x 54 Characters
Screen Format:	Keyboard/Computer
Data Rate:	120 Characters Per Second

MODEL 4033ATTY TELETYPEWRITER TERMINAL

Print Speed:	10 Characters Per Second
Input Media:	Keyboard, Paper Tape, Computer
Output Media:	8 1/2" Paper, Punched Paper Tape
Character Set:	64 USASCII

MODEL 4035ATTY TELETYPEWRITER TERMINAL

Print Speed:	10 Characters Per Second
Input Media:	Keyboard, Paper Tape, Computer
Output Media:	8 1/2" Paper, Punched Paper Tape
Character Set:	64 USASCII

MODEL 4030AP PRINTER TERMINAL

Speed: Alphabetic —	25 Characters Per Second (Average)
Numeric —	30 Characters Per Second (Average)
Tabulating (Forward and Reverse):	144 Positions Per Second
Spacing:	100 Positions Per Second
Type Format:	Manifold
Paper Feed:	Pin Feed, Split Platen
Writing Line:	192 Characters
Form:	Pin Feed — 16 7/8"
Number of Copies:	Original and Six
Input:	Keyboard/Computer
Features:	Front Loading

HETRA SERIES 5000 CARD EQUIPMENT

MODEL 5300 CARD READER

Reading Speed: 300 Cards Per Minute
Hole Sensing Method: Photo-Electric
Feed Mechanism: Bifurcated Knife Edge
Hopper Capacity: 600 Card, Input and Output

MODEL 5400 CARD READER

Reading Speed: 400 Cards Per Minute
Hole Sensing Method: Photo-Electric
Feed Mechanism: Vacuum Belts
Hopper Capacity: 500 Cards, Input and Output

HETRA SERIES 6000 MAGNETIC TAPES

MODEL 6005ATC CASSETTE RECORDER

Transfer Rate: Synchronous - 2400 Bits Per Second
Asynchronous - Up to 300 Characters
Per Second

Format: Serial by Bit
Control Signals: End of Tape, Cartridge
Not Sealed

Record Size: Variable (or 400 bits)
Tape Supply/Take-Up: Standard Cassette
Reel Length: 300 Feet, 1/8" Wide
Reel Capacity: 200,000 Characters

MODEL 6005DTC DUAL CASSETTE RECORDER

Transfer Rate: Synchronous: 2400 Bits Per Second
Asynchronous: Up to 300 Characters
Per Second

Number of Tape Reels on Line: 2 Cassettes
Format: Serial by Bit
Control Signal: Tape 1 On-Line
Tape 2 On-Line
End of Tape, 1 or 2 Cartridge
Not Sealed

Record Size: Variable (or 400 Bits)
Tape Supply/Take-Up: Standard Cassette
Reel Length (each): 300 Feet, 1/8" Wide
Reel Capacity (each): 200,000 Characters

MODEL 6020ATR TAPE RECORDER

Transfer Rate: 20,000 Bytes Per Second at
25 IPS at 800 BPI

Record Size: 3/4" (IBM Compatible)
Slew Speed: 120 IPS (Approximately)
Tape Format: IBM Compatible, 7 or 9 Track
Density: 800 BPI (others available on
special order)

Record Mode: Read after Write

HETRA SERIES 7000 MEMORY SYSTEM

MODEL 7100A CORE MEMORY

Cycle Time: 1 Microsecond
Architecture: 3D, 3 Wire
Operating Mode: Read and Write
Basic Size: 4K x 9 Bits
Maximum Size: 65K x 9 Bits, in 4K Modules,
located in Mainframe
Interface: Direct Access to Computer and
Multiple Channel Adapter

MODEL 7075A CORE MEMORY

Cycle Time: 750 Nanoseconds
Architecture: 3D, 3 Wire
Operating Mode: Read and Write
Basic Size: 16K x 9 Bits (Requires
Separate chassis)
Maximum Size: 65K x 9 Bits
Interface: 7 Direct Access Ports through
Multiple Channel Adapters

HETRA SERIES 8000

COMMUNICATIONS ADAPTERS

MODEL 8001-8LTU SYNCHRONOUS LINE TERMINATOR

Speed: 55 to 300 BPS
Number of Lines: Up to 8 Separate Lines
Interface: EIA Standard RS 232 A or B,
Bell Data Set 103A or 103F
Half or Full Duplex
Mode: Serial Bit
Timing: Synchronous
Line Type: Leased or Switched
Option: Automatic Calling

MODEL 8002AM MODEM ADAPTER

Speed: 600, 1200, 2000, or 2400 BPS
Interface: EIA Standard RS 232A or B,
Bell Data Sets 201A, 201B,
202C or 202D

Mode: Serial by Bit
Timing: Synchronous/Asynchronous
Line Type: Leased or Switched
Option: Automatic Calling

MODEL 8003AM MODEM ADAPTER

Speed: 40,800 to 230,400 BPS
Interface: Bell Data Sets 301B, 303B,
303C or 303D

Mode: Full Duplex
Method: Serial by Bit
Timing: Synchronous/Asynchronous
Line Type: Leased (Broad Band)

8004AM MODEM ADAPTER

Speed: 4800 BPS
Interface: Milgo Model 4400/48 Modem
Mode: Half or Full Duplex
Method: Serial by Bit
Timing: Synchronous
Line Type: Leased or Switched
Option: Automatic Calling

MODEL 8064 MULTIPLEXOR/CONCENTRATOR

Number of Low-Speed Lines: Up to 64 at up to 300 BPS
Number of High-Speed Lines: Up to 4 at up to 2400 BPS
Interface: Bell Data Set/HETRA Model
8008LTU

Firmware: Error Detect, Rate Changes,
Special Character Recognition,
Bit and Byte Assembly
and Disassembly, Plus Com-
puter Recognition Logic

THE HETRA COMMITMENT

The wide range of software, service, and training support available with all HETRA systems are indicative of HETRA's commitment to customer support.

PROGRAMMING SUPPORT

When desired, HETRA programming support can begin before the terminal is installed. A support specialist, having a thorough knowledge of HETRA systems, instructs the customer's programming staff in the features, characteristics, and efficient use of the terminal. He shows them how to apply the available systems communications and applications software and gives on-the-spot guidance as customer personnel design and code their own programs.

The support specialist also ensures that customer personnel are familiar with the available hardware and software manuals, and other programming aids. After system installation and debugging, he runs acceptance tests and actually demonstrates the use of all hardware and all HETRA supplied systems and applications software.

Programming support does not, furthermore, stop once the system has passed acceptance tests. Customer system engineers make scheduled visits to acquaint customer personnel with new software releases, to assist in the making of software modifications, and to help in the solution of special problems. And, they are always available, either in person or on the telephone, to deal with urgent questions or problems as they arise.

MAINTENANCE

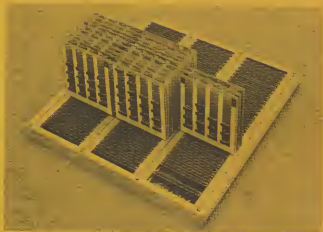
The HETRA customer engineering organization services and maintains all HETRA systems. This organization stands ready to provide maintenance and service precisely tailored to the customer's needs and desires.

Routine, preventative and remedial service is available on the basis of per call, on-site engineer, and single or multi-shift maintenance contracts. Maintenance contracts can be tailored to the customer's work week, number of shifts worked, the hours of operation within each shift, and type of coverage needed or desired.

Every maintenance contract covers all parts and labor required by routine and remedial maintenance. Customers specifying on-site engineers have immediate access to the resident engineer's broad experience with the equipment and can seek his advice on the most efficient operation and utilization of the system.

Every HETRA customer engineer devotes a large portion of his first year in training and is regularly recalled to headquarters for refresher courses and further training.

SUB-PROCESSOR CHASSIS
REPRESENTATIVE OF MODULE CONSTRUCTION



EDUCATION AND TRAINING

An integral part of the HETRA customer support program is the provision of education and training courses for customer programming and maintenance personnel. Full-time instructors are available to meet customer needs in this vital area.

Every HETRA customer is entitled to send a specified number of programmers to a formal course in software, as well as personnel to an introductory course in maintenance, at no charge. Additional students may attend at a nominal charge per course.

Programming training includes general programming techniques and effective use of operating systems. Ample machine time is made available to allow the student to become proficient in the use of systems and HETRA supported applications programs. The introductory maintenance course thoroughly covers central processor and peripheral equipment circuitry, operation and maintenance. Advanced maintenance courses are available on request.

ADDITIONAL INFORMATION

For more information about the outstanding HETRA T-Series Remote Terminal Processing Systems contact:

T-Series Marketing Manager
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Post Office Box 970
1151 E. Eddie Allen Road
Melbourne, Florida 32901
Telephone: (305) 723-7731

HETRA



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